16-2723, -2725

United States Court of Appeals for the Federal Circuit

QUEEN'S UNIVERSITY AT KINGSTON,
Appellant,

v.

SAMSUNG ELECTRONICS CO., LTD.; SAMSUNG ELECTRONICS AMERICA, INC.;
Appellees,

APPEALS FROM THE UNITED STATES PATENT AND TRADEMARK OFFICE,
PATENT TRIAL AND APPEAL BOARD, NOS. IPR2015-00583 & IPR2015-00584

APPELLEES' RESPONSIVE BRIEF

Michael J. McKeon
Fish & Richardson P.C.
1425 K Street, NW
Washington, DC 20005
(202) 783-5070
mckeon@fr.com

Craig E. Countryman
Fish & Richardson P.C.
12390 El Camino Real
San Diego, CA 92130
(858) 678-5070
countryman@fr.com

May 1, 2017

CERTIFICATE OF INTEREST

1. The full name of every party represented by me is: Samsung Electronics Co., Ltd.; Samsung Electronics America, Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is: N/A.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party represented by me are: Samsung Electronics, Co., Ltd. owns 10% or more of the stock in Samsung Electronics America, Inc.

4. The names of all law firms and the partners or associates that appeared for the party now represented by me in the trial court or agency or are expected to appear in this court are:

> Fish & Richardson P.C.: Michael J. McKeon, Craig E. Countryman, W. Karl Renner, Jeremy Monaldo, and Wasif Qureshi*.
>
> * = no longer with the firm

Dated: May 1, 2017

/s/ Craig E. Countryman
Craig E. Countryman

TABLE OF CONTENTS

Page

Certificate of Interest i

Statement of Related Cases vii

Statement of Jurisdiction viii

Statement of the Issues ix

Introduction 1

Statement of the Facts 2

I. Appellant's Patents: Electronic Devices that Change Device-Initiated Operations Based on Where the User is Looking Using Technology Previously Developed at IBM. 2

II. The Prior Art: Goldstein Discloses a Cellphone With Device-Initiated Text Display That Uses the Same IBM Technology to Determine Where the User is Looking...... 7

III. The Proceedings Below: The Board Finds that Goldstein Anticipates Appellant's Claims Now on Appeal. 11

A. Samsung's Petition Demonstrates Anticipation, and Queen's University Doesn't Challenge Enablement at the Institution Phase. 11

B. Appellant's Patent Owner Response Argues, for the First Time, That Goldstein Does Not Enable Using "Eye Trackers" But Never Mentions Its Disclosure of Eye Contact. 13

C. Samsung's Reply and Supporting Expert Declaration Responded to, and Refuted, Appellant's New Arguments on Goldstein by Showing It Enables Using Eye Contact Sensors... 15

TABLE OF CONTENTS (continued)

Page

D. The Board Properly Declines to Permit Appellant to Introduce Untimely Evidence That It Could Have Offered Sooner. 19

E. The Board's Final Written Decision Determines that Goldstein Anticipates the Challenged Claims. 19

Summary of the Argument 23

Argument 24

I. The Board Did Not Abuse Its Discretion by Preventing Appellant from Filing an Untimely Declaration. 24

A. Appellant Had Ample Opportunity to Address the Relevant Issues, and the Board Properly Prevented Delay of the Proceedings. 25

B. Samsung's Arguments Were Consistent Throughout the IPR, Rendering Appellant's Cited Case Law Inapplicable. 31

II. The Board Correctly Determined that Goldstein Anticipates the Claims. 37

A. Substantial Evidence Supports the Board's Finding that Goldstein Discloses a Hardware Sensor "in or on" the Mobile Device. 38

B. Goldstein Enables Implementing the Pause-and-Resume Feature on a Cellphone Given the Board's Well-Supported Fact Findings. 43

C. The Board Applied the Correct Legal Principles and Did Not Spill into Obviousness 51

Conclusion 53

Certificate Of Service And Filing 54

Certificate of Compliance 55

TABLE OF AUTHORITIES

Page(s)

Cases

In re Antor Media Corp.,
689 F.3d 1282 (Fed. Cir. 2012) .... *passim*

Ariosa Diagnostics v. Verinata Health, Inc.,
805 F.3d 1359 (Fed. Cir. 2016) 29

In re Bager,
47 F.2d 951 (C.C.P.A. 1931) 40

Belden Inc. v. Berk-Tek LLC,
805 F.3d 1064 (Fed. Cir. 2015) 24

Bilstad v. Wakalopulos,
386 F. 3d 1116 (Fed. Cir. 2004) 24

Dell Inc v. Acceleron, LLC,
818 F.3d 1293 (Fed. Cir. 2016) 35

Elan Pharm., Inc. v. Mayo Found.,
346 F.3d 1051 (Fed. Cir. 2003) 38, 52

In re Epstein,
32 F.3d 1559 (Fed. Cir. 1994) 48

In re Graves,
69 F.3d 1147 (Fed. Cir. 1995) 38

Hockerson-Halberstadt, Inc. v. Avia Group Int'l.,
222 F.3d 951 (Fed. Cir. 2000) 41

Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.,
821 F.3d 1359 (Fed. Cir. 2016) 24

Minn. Mining & Mfg. Co. v. Chemque, Inc.,
303 F.3d 1294 (Fed. Cir. 2002) 38

In re Mraz,
455 F.2d 1069 (C.C.P.A. 1972) 40

TABLE OF AUTHORITIES (continued)

Page(s)

In re NuVasive, Inc.,
841 F.3d 966 (Fed. Cir. 2016) 35, 36

Queen's University at Kingston, et al. v. Samsung Electronics, Co., Ltd., et al.
No. 14-cv-00053-JRG-RSP (E.D. Tex.) .... *passim*

Redline Detection LLC v. Star Envirotech, Inc.,
811 F.3d 435 (Fed. Cir. 2015) 26

Synopsys, Inc. v. Mentor Graphics Corp.,
814 F.3d 1309 (Fed. Cir. 2016) 38

Statutes

5 U.S.C. § 553 34

5 U.S.C. § 554 34

5 U.S.C. § 556 34

5 U.S.C. § 706(2)(A) 24

35 U.S.C. § 316(a)(11) 28, 29

Other Authorities

37 C.F.R. § 42.23 27

37 C.F.R. § 42.51 28

37 C.F.R. § 42.62 29

STATEMENT OF RELATED CASES

These consolidated appeals are from *inter partes* review proceedings involving U.S. Patents 7,762,665 and 8,096,660. A panel of this Court consisting of Judges Lourie, O'Malley, and Reyna previously decided a *mandamus* petition addressing a privilege issue arising from a parallel district court litigation involving those patents. *See In re Queen's University at Kingston*, No. 15-145. The Court's opinion was written by Judge O'Malley, with a dissent by Judge Reyna, and it was published at 820 F.3d 1287 (Fed. Cir. 2016). The parties' parallel district court litigation, *Queen's University at Kingston, et al. v. Samsung Electronics, Co., Ltd., et al.*, No. 14-cv-00053-JRG-RSP (E.D. Tex.), will be impacted by the Court's decision in this appeal.

STATEMENT OF JURISDICTION

Queen's University has appealed the Patent Trial and Appeal Board's final written decisions invalidating claim 11 of the '665 patent and claim 14 of the '660 patent. The Board issued its final written decisions on July 27, 2016. (Appx1-125.) Queen's University filed its notices of appeal on September 28, 2016, within the 63-day deadline set by the applicable statutes and regulations. *See* 35 U.S.C. § 142; 37 C.F.R. § 90.3(a)(1). This Court thus has jurisdiction under 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. § 141(c).

STATEMENT OF THE ISSUES

1. Whether the Board abused its discretion by declining to allow Appellant to submit additional, untimely expert evidence when that evidence could have been submitted months earlier and accepting a late submission would have interfered with the Board's ability to meet its statutory deadline to complete the *inter partes* review.

2. Whether substantial evidence supports the Board's finding that Appellant's claims are anticipated by the Goldstein reference when:

   a. Appellant's arguments that Goldstein did not disclose all the claim limitations conflict with the reference's plain text and figures;

   b. Appellant's arguments that Goldstein was not enabling were based on an erroneous interpretation of its disclosure and directed to more complex features that were separate and unnecessary for the feature that was held to be anticipating; and

   c. The Board properly assessed enablement by looking to other prior art that showed the capabilities of skilled artisans.

INTRODUCTION

Appellant primarily challenges a procedural ruling where the Board did not abuse its considerable discretion. Samsung's petitions demonstrated the Goldstein reference was anticipating and disclosed, among other things, a cellphone that senses "eye contact." Appellant's response ignored Goldstein's disclosure of sensing eye contact, and argued, for the first time, that Goldstein did not enable something else ("eye trackers"), while presenting an incomplete account of then-existing technology. Samsung's reply reiterated that Goldstein disclosed sensing eye contact, responded on enablement with publicly available evidence that then-existing technology was more advanced than Appellant had claimed, and showed that Goldstein used the same techniques that Appellant's own patents relied upon for enablement. Recognizing it had blundered by strategically limiting its earlier submissions, Appellant sought to strike Samsung's reply evidence or submit a sur-reply and new evidence. The Board refused to strike the reply evidence, finding it properly responsive, but allowed a sur-reply. The Board did not, however, permit Appellant to submit more expert evidence.

The Board's decision was sound. Appellant's experts could (and should) have addressed all the relevant issues months earlier, in their prior declarations. The Board was properly enforcing its rules and ensuring that it met the 1-year statutory deadline to complete the IPR. The Board also correctly gave Samsung, who it charged with the burden of proof, the last evidentiary word. And, as demonstrated below, the Board's anticipation finding was well-supported by the evidence before it.

STATEMENT OF THE FACTS

I. Appellant's Patents: Electronic Devices that Change Device-Initiated Operations Based on Where the User is Looking Using Eye Sensing Technology Previously Developed at IBM.

Appellant's '665 and '660 patents relate to electronic devices that take certain actions depending on whether the user is looking at the device and paying attention to it. (*See, e.g.,* Appx163 at 7:63-65; Appx160 at 1:23-29; Appx5.) Appellant's patents acknowledge that others had already designed devices that users could control based on user attention, chronicling "many previous attempts" that relate to "controlling computer functions by tracking eye gaze direction." (Appx160 at 1:36-52.) One example was a prior patent to inventors at IBM (Amir et al.), which Appellant said "teaches an eye contact sensor for determining whether a user is looking at a target area, and using the determination of eye contact to control a device." (*Id.* at 1:63-66.)

Appellant's patents did not distinguish prior art by the type of device it involved (*e.g.*, desktop computers vs. cellphones). Nor did they distinguish prior art based on the techniques for sensing or evaluating whether the user is looking at the device (*e.g.,* a particular algorithm or technique for sensing eye contact or eye movement). Instead, Appellant's patents try to distinguish between "user-initiated communications" and "device-initiated interactions," admitting that "it is evident that considerable effort" has been devoted to controlling the former based on the user's attention, while suggesting that "little work" has been done on controlling the latter. (*Id.* at 2:4-7.) But we'll see that the prior art Goldstein reference disclosed both.

Appellant's patents do not disclose any new techniques for determining whether the user is making eye contact with a cellphone or other device. The patents instead discuss using an existing "eye contact sensor based on bright-dark pupil detection using a video camera," for which they again instruct the reader to "see, for example, U.S. Pat. No. 6,393,136 to Amir et al.," which describes prior work by IBM. (Appx163 at 7:5-8; *see also* Appx164 at 9:36-39.) Appellant's patents explain that "[t]his technique," *i.e.*, the IBM technique, uses "intermittent on-camera axis and off-camera axis illumination of the eyes to obtain an isolated camera image of the user's pupil." (*Id.* at 7:8-10.) The on-axis lighting causes a "bright pupil effect," like the "red eye" effect in photos, highlighting the pupil, while the off-axis lighting provides a baseline for comparison. (*Id.* at 7:10-13.) Determining the differences between the images allows one to identify the user's pupils. (*Id.*) The camera "preferably" uses "infrared (IR) light, which does not distract the user." (*Id.* at 7:19-21.)

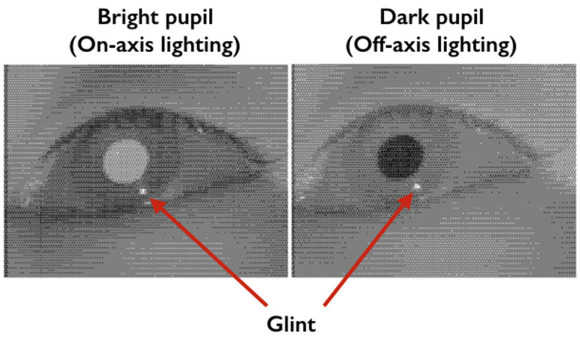
Appellant's patents add that the sensor's accuracy can be improved by also measuring "glint," *i.e.*, "a reflection of light on the outer side of the cornea, that acts as a relative reference point, which can be used to eliminate the confounding effects of head movements" and thus help distinguish eye movement from head movement. (*Id.* at 7:22-27.) The sensor capitalizes on the fact that "glint moves with the head, but does not rotate with the pupil," so "the position of the glint relative to the pupil can be used to determine the direction a user or subject is looking." (*Id.* at 7:27-30.) The prior IBM patent to Amir *et al.* likewise describes using the position of "glint" relative to the pupil to determine where the user is looking and whether he is making "eye contact" with the device. (Appx3045-3046 at 5:65-7:33; Appx4702-4704.)

Appellant's patents rely on existing hardware to capture the information about pupil location and glint. The specification says that it has used "this technique," *i.e.*, the prior IBM technique, "to identify eye contact of users at approximately 3 meters distance," which is a little under 10 feet, "using standard 320x240 CCD cameras with analog NTSC imaging." (Appx163 at 7:35-45.) NTSC imaging is a standard video format that had existed for decades before Appellant's patents. And anyone who is holding a cellphone will have it within 10 feet of their eyes during use, so the patents' comments on using "standard" cameras apply equally to that application.

Appellant's patents then give an example of their "[a]ttentive cell phone" that does not suggest any special hardware or software is required. (Appx165-166 at 12:46-14:29.) The patents do not actually describe incorporating the eye contact sensor into the cellphone—they mention only embodiments where the sensor was "on a cap worn on the user's head" or "embedded in eye glasses worn by the user," as shown in the patents' Figure 4. (Appx166 at 13:33-37; Appx4749-4751.) The patents' cellphone example again references the prior IBM work for determining where the user is looking, this time citing a paper ("Morimoto 2000") by the same IBM authors as the prior Amir et al. patent. (*Id.* at 13:40-50; Appx3448-3455.) Appellant's patents characterize the prior IBM work as providing a "simple algorithm" for determining whether the user is looking at the device without even calibrating the sensor:

> By synchronizing the LEDs with the camera clock, bright and dark pupil effects were produced in alternate fields of each video frame. A ***simple algorithm found any eyes*** in front of the user by subtracting the even and odd fields of each video frame (***Morimoto, 2000***). The LEDs also produced a reflection from the cornea of the eyes. These glints appeared near the center of the detected pupils when the subject was looking at the user, ***allowing the sensor to detect eye contact without calibration***.

(*Id.* at 13:40-48.) Morimoto includes the eye images below, which are taken from an earlier Morimoto paper from 1998 and show the IBM group using the same on-axis/off-axis lighting techniques discussed in Appellant's patents to determine where the user is looking by comparing the pupil location to the "glint":



(Appx3451 (annotations added).) Appellant's patents don't suggest alternative ways of determining where the user is looking other than these prior IBM techniques.

Appellant's specification does, as the blue brief notes, distinguish between "eye contact sensors" and "eye trackers." In particular, the specification says that "[e]ye contact sensors as used in the invention are distinguished from eye trackers, in that eye contact sensors detect eye contact when a subject or user is looking at the sensor, whereas eye trackers detect eye movement to determine the direction a subject or user is looking." (Appx162-163 at 6:67-7:4.) But Appellant's patents say that the prior

IBM work shows "an ***eye contact sensor*** for determining whether a user is looking at a target area," (Appx160 at 1:63-65), and then discuss applying its techniques at length when discussing embodiments of Appellant's alleged invention. (Appx163 at 7:5-34.) So there can be little doubt that sensors employing the IBM group's techniques qualify as "eye contact sensors" as the Appellant's patents use that term.

Despite the specification's distinction between "eye contact sensors" and "eye trackers," Appellant's claims do not limit how the device determines where the user is looking, so both are covered. The broadest claims, like claim 1 of the '660 patent, cover any device with "a hardware sensor in or on the device that senses attention of the user" where a device-initiated operation "is modulated" based on the user's attention:

> 1. Apparatus for communication between a user and a device, comprising:
>
> a hardware sensor in or on the device that senses attention of the user specifically toward the device; and
>
> a processor that processes a signal from the hardware sensor and outputs to the device a measure or index of the user's attention toward the device; and
>
> wherein operation of the device is modulated on the basis of the measure or index of the user's attention toward the device;
>
> wherein the operation that is modulated is initiated by the device and provides a notification and/or information and/or communication to the user based on the user's attention toward the device.

(Appx170 at 22:22-35.) Claim 1 of the '665 patent is similar and recites a method of controlling such a device. (Appx150 at 21:50-63.)

The Board invalidated these broad claims in the *inter partes* review and Appellant does not challenge that decision. (Appx14-21; Appx76-83.) Appellant confines its appeal to dependent claims—claim 14 of the '660 patent and claim 11 of the '665 patent—that are limited to "a cellular telephone" (and method of controlling one) with the elements of claim 1. (Appx171 at 23:5-6; Appx150 at 22:28-29.)

II. The Prior Art: Goldstein Discloses a Cellphone With a Device-Initiated Text Display That Uses the Same IBM Technology to Control the Device Based on Where the User is Looking.

The prior art, it turns out, disclosed the same cellphone claimed in Appellant's patents—*i.e.*, a cellphone that changes the operation of a device-initiated process based on whether the user is looking at the device. In particular, the Goldstein patent application, US 2003/0038754, shows a cellphone that presents scrolling text to the user when she looks at the device, pauses the scrolling if the user looks away, and then resumes the scrolling once the user looks back at the device. (*See, e.g.,* Appx2345-54; Appx2351-2352 at ¶¶ 8, 21-30; Appx2295-2306; Appx4705-4713.) This "pause-and-resume" feature addressed a challenge with then-existing cellphones: they had small screens, making it hard for users to read long texts. (Appx2350 at ¶ 3.) Goldstein sought to make the cellphone mimic the experience of reading a paper document, including the fact that text "remains fixed on the paper document" and allows the reader to "at any time resume reading, at the place where he left off." (*Id.* at ¶ 5.)

Goldstein also discussed including other, more ambitious, features on the device. For example, Goldstein discusses having the device adjust the speed of the text presentation using information about "eye movements of a reader in response to changes in reading speed." (*Id.* at ¶ 9; Appx2348-2353 at ¶¶ 5, 31-38, Figs. 5-7.) In particular, "continual rapid side-to-side movement of a reader's eyes, from right to left and back, could indicate the text was being presented to the reader too rapidly." (*Id.* at ¶ 35.) But those advanced features (and whether they are enabled) aren't at issue here, because Goldstein's pause-and-resume feature alone discloses the relevant elements in Appellant's claims.

Goldstein depicts a mobile device with the pause-and-resume feature in Figure 1. (Appx2346.) The device (grey, 10) has a screen (blue, 120) and "eye tracking sensors" (20, 22) that detect whether the user's eyes (18) are looking at the screen (24) or away (68). (Appx2351-2352 at ¶ 22.) The sensors are "located proximate to boundary 16, above and below window 12, respectively" and "are mounted proximate to a display screen, in a known positional relationship" with the screen. (*Id.* at ¶ 21.)

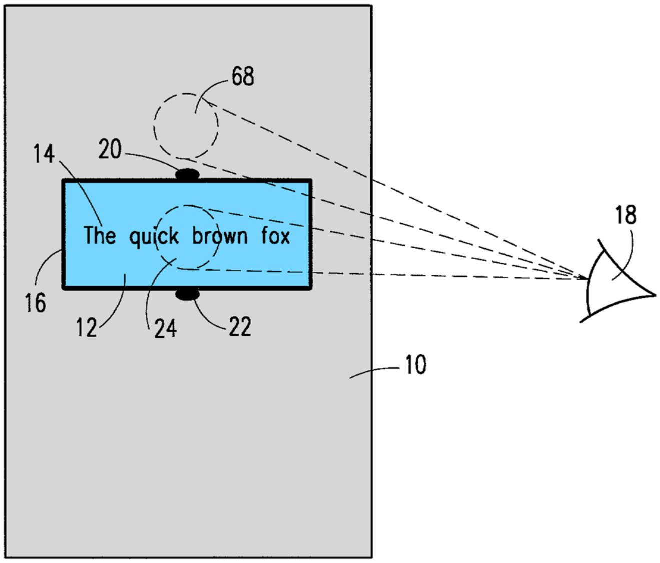


FIG. 1

Goldstein's originally-filed claim 11 confirms that both the display window and the sensors are "in" the "device," as Appellant's claims require. (Appx2354.)

Just as in Appellant's patents, Goldstein's sensor determines where the user is looking (*i.e.*, his "point of gaze or focus") based on pupil location. (Appx2351-2352 at ¶¶ 21, 24.) The device begins displaying text when the user looks at the screen, but "if the sensors detect that the pupils of the reader are no longer focused on the text window," then the text "presentation is paused," and "if the sensor detects that the reader's pupils are again focused on the text, presentation resumes." (*Id.* at ¶ 24.)

Goldstein broadly discloses that its sensors can be "any suitable device" that can determine whether the user is looking at the screen or away from it. Goldstein discusses one example—an "eye tracking device developed by the IBM Corporation," which is referred to by the acronym MAGIC. (Appx2351-2352 at ¶¶ 21-30; Appx2346 at Fig. 2.) Goldstein cites a 1999 paper disclosing IBM's MAGIC system, which shares two co-authors with the IBM publications (*i.e.,* the Amir patent and Morimoto paper) cited by Appellant's patents. (Appx2352 at ¶ 30; Appx2715-2722; Appx3038; Appx3448.) But Goldstein stresses that IBM's MAGIC system is only an "example" and that "any suitable device" that determines whether the user's pupils are directed at the device's screen may be used:

> While the IBM tracking device may be employed as sensor 20, it is to be emphasized that sensor 20, for purposes of the invention, ***only needs to detect one of two states of the user's eyes***. More specifically, it is only necessary to know whether the pupils of the user's eyes 18 are directed to a point of gaze 24, located within window 12 and thus focused upon text

> segments therein, or are directed to any location outside the window 12, such as to point of gaze. It is to be emphasized further that ***any suitable device*** known to those of skill in the art ***which is capable of performing this two state detection task may be used for sensor 20***.

(Appx2351 at ¶ 22.)

Goldstein then provides more detail about an embodiment that uses a sensor adapted from the IBM MAGIC device. (Appx2352 at ¶¶ 26-30; Appx2346 at Fig. 2.) Just as in the IBM sensors described in Appellant's patents, Goldstein describes using a sensor that includes a "TV camera" and "two near infrared (IR) time multiplexed light sources"—one that is placed "on" the optical access of the camera, and the other that is placed "off of the camera axis." (Appx2352 at ¶¶ 26-28.) The sensor determines the pupil's location by comparing the "bright" image generated by the on-axis light source, and the "dark" image generated by the off-axis light source. (*Id.* at ¶ 28.) The sensor further detects the corneal "glint" using the dark image, and the device performs a "geometric computation" using the pupil and glint information, together with the relative position of the sensor and display window to provide "an estimate of a reader's point of gaze in terms of coordinates on the display window." (*Id.* at ¶ 29; *see also* Appx9557-9559.) Goldstein thus describes using the "same IBM eye sensing technology" that Appellant's patents rely upon. (*See* Appx 4751-4752, Appx4713-4717; *compare* Appx2351-2352 at ¶¶ 21-30 *and* Appx2718 & n.10, Appx3448-3452, *with* Appx160-170 at 1:63-67, 7:5-34, 13:42-54, 22:12-14 *and* Appx3038-3050 at Abstract, 2:62-64, 5:65-7:33, Fig. 3.)

Goldstein finishes its discussion of the exemplary IBM sensor, however, by again stressing that it "is by no means intended to limit the sensor 20 to the above device," and that "a number of options for sensor 20 will readily occur to those of skill in the art." (*Id.* at ¶ 30.) Any sensor will do for implementing the pause-and-resume feature, so long as it can "determine whether a reader's point of gaze is or is not focused on a location within the text window 12." (*Id.*)

III. The Proceedings Below: The Board Finds that Goldstein Anticipates Appellant's Claims Now on Appeal.

A. Samsung's Petitions Demonstrate Anticipation, and Queen's University Doesn't Challenge Enablement at the Institution Phase.

Samsung sought *inter partes* review of claims 1-6, 8-13, 15, 16, and 18-20 of the '665 patent and claims 1-6, 8-16, 18, 19, and 21 of the '660 patent, in petitions supported by an expert, Dr. Don Turnbull, with over 20 years of relevant experience. (Appx176-239; Appx1059-1123; Appx2284-2336.) As relevant here, Samsung's petitions demonstrated that Goldstein anticipates claim 11 of the '665 patent and claim 14 of the '660 patent. (*Id.*)

Samsung pointed to Goldstein's sensor 20 as the claimed "hardware sensor in or on the device for sensing attention of a user," and quoted Goldstein's exemplary description of using the IBM MAGIC system for pupil detection. (Appx192-201; Appx1075-1084; Appx2295-2304.) Samsung's petitions (and accompanying expert declaration) explained that Goldstein's sensor worked by determining "the point of gaze or focus, with respect to the screen of the pupils of the user's eyes," and that, when the user's "focus shifts outside [the] text window," it causes the device to pause the text scroll. (Appx194, *quoting* Appx2351 at ¶ 21; Appx 1077; Appx2298-2300.) Samsung's petitions (and expert) further explained that, by analyzing whether the user's pupils were focused within the text window, Goldstein discloses "sensing … eye contact" to control the device:

> **Eye contact**: Goldstein teaches "detect[ing] when a reader's focus shifts outside the text window, indicating that the reader has become inattentive to displayed text." *Id.* at Abstract (emphasis added). Detecting when the user's eyes are focused on the text window discloses "sensing ... eye contact." Ex. 1003 [Samsung's expert declaration], ¶ 38.

(Appx201; Appx1084; Appx2304.) Appellant is thus wrong to say (at 35 n.5) that Samsung's petition did not mention detecting eye contact.

Although it certainly could have, Appellant did not, in its preliminary responses, challenge that Goldstein was an enabling prior art reference or that it disclosed a sensor "in or on" the device. (Appx285-298; Appx1169-1182.) Nor did Appellant contest that Goldstein disclosed sensing "eye contact" to control the device. (*Id.*) Instead, Appellant argued that Goldstein was missing several other claim limitations dealing with processing, outputting, and whether the changes to the device's operation were based on the user's "attention" to the device. (*Id.*)

The Board instituted review finding it more likely than not that Goldstein anticipated. (Appx325-349; Appx1209-1233.) The Board noted that Appellant had not separately contested most of the dependent claims, (Appx336; Appx1220), including the dependent claims (*e.g.*, claim 4 of the '665 patent and claim 2 of the '660 patent) where Samsung had demonstrated that Goldstein disclosed using eye contact to control the device. (Appx201; Appx1084.) The Board also instituted on an alternative invalidity ground presented by Samsung—obviousness based on combining the Ho and Roschelle references. (Appx341-343; Appx1225-1227.)

B. Appellant's Patent Owner Response Argues, for the First Time, That Goldstein Does Not Enable Using "Eye Trackers" But Never Mentions Its Disclosure of Eye Contact.

Having lost at the institution stage, Appellant shifted gears in its Patent Owner Response, now focusing on an alleged distinction between "eye trackers" and "eye contact sensors." (Appx462-470; Appx5818-5868; Appx5586-5622.) Appellant relied upon two experts—Dr. Ravin Balakrishnan, who argued that Goldstein did not enable incorporating a "specialized eye tracker" into a cellphone, and Dr. Jeff Pelz, who talked generally about existing cellphones and eye trackers, without mentioning the Goldstein reference. (*See, e.g.*, Appx467-470; Appx5619-5622; Appx5818-5868.) Appellant also argued that Goldstein did not disclose including a sensor "in or on the device" where the device was a cellphone. (Appx464-467; Appx5608-5619.)

When addressing enablement, Appellant and its experts made several incorrect statements about Goldstein and the state of the relevant technology. For example, Dr. Balakrishnan characterized Goldstein as disclosing use of a "specialized eye tracker" such as IBM's MAGIC system and claimed that Goldstein "does not specify which other devices would be suitable." (Appx5602-5603.) In fact, Goldstein said that "any" device that can distinguish between two states—(1) when the user is looking at the screen and (2) when the user isn't looking at the screen—could be used. (Appx2351-2352 at ¶¶ 22, 30; Appx4708-4711.) Likewise, Dr. Pelz, asserted that then-existing cellphones lacked "high processing power," "significant memory," and "high resolution cameras," (Appx5830), when, in fact, several cellphones included all three of those characteristics. (Appx4732-4749.) Dr. Pelz also claimed that a Master's Thesis by one of Goldstein's graduate students on a prototype called "Smart Bailando" described a failed attempt to implement the Goldstein invention on a mobile device. (Appx5844-5845; Appx5948-6012.) But Dr. Pelz did not cite another paper showing the Goldstein group ***did*** successfully implement the pause-and-resume feature on a mobile device. (Appx4724-4730; Appx3597-3601.) And the parts of the thesis Dr. Pelz cited were irrelevant—they involved attempts to implement a more advanced eye sensing technology ("Smart Eye") that was different from the IBM pupil/glint approach actually disclosed in Goldstein. (*See, e.g.,* Appx4728-4729.)

Despite arguing that Goldstein did not enable use of an "eye tracker," Appellant and its experts notably ignored whether it enabled use of an eye contact sensor to perform the pause-and-resume functionality. Appellant did not dispute that Goldstein disclosed using "sensing … eye contact" to control the device, as Samsung's petitions had shown. (Appx201; Appx1084.) Nor did Appellant dispute that a skilled artisan could readily implement Goldstein's pause-and-resume feature with eye sensing technology based on eye contact. Those omissions were no accident: Appellant's patents discuss "eye contact" and rely on the same IBM technology as

Goldstein, so Appellant couldn't have argued that Goldstein was not enabled without calling its own patent into question. Appellant thus had a strong motive to confine its experts to discussing "eye trackers" while having them understate the capabilities of then-existing cellphones and of the Goldstein group's work on Smart Bailando.

C. Samsung's Replies and Supporting Expert Declaration Responded to, and Refuted, Appellant's New Arguments on Goldstein by Showing It Enables Using Eye Contact Sensors.

Samsung's replies refuted Appellant's arguments on Goldstein's disclosure and supposed lack of enablement. (Appx646-659; Appx1530-1543; Appx4692-4759.) The replies were Samsung's first opportunity to address enablement, as Appellant, who bore the burden of production on the issue, first raised it in the Patent Owner Response. Samsung thus presented an expert, Dr. Irfan Essa, to respond to Appellant's arguments that Goldstein was not enabling, including Appellant's comments about then-existing cellphones and Smart Bailando. (Appx4692-4759.) Dr. Essa had also worked with one of the IBM scientists (Flickner) whose work was at issue, (Appx4719-4720), and he was thus well situated to correct Appellant's characterization of the IBM work referenced in Goldstein (and Appellant's patents).

Dr. Essa first reinforced the point from Samsung's petition that Goldstein discloses sensing eye contact. Both Goldstein and Appellant's patents describe the same IBM techniques for pupil and glint detection, which Appellant's patents characterize as using an "eye contact sensor." (Appx4702-4704, *citing* Appx3041-3047 at 6:21-24, 6:44-47, 6:59-61, 7:29-31, 9:34-35, Fig. 3; Appx4705-4713.) As a result, "Goldstein confirms that the sensors needed to implement its automated pause/resume functionality would be eye ***contact*** sensors as described by the '665 and '660 Patents." (Appx4711 at ¶ 30.) What's more, Dr. Essa noted Goldstein's disclosure that the pause-and-resume features involves a sensor that "only needs to detect one of two states of the user's eyes"—namely, if the user is looking within the screen or outside it. (*Id.*) Therefore, "Goldstein's description of the pupil and glint detection" is "similar to the pupil and glint detection described as part of eye contact sensing in the '665 and '660 patents," and did not involve detecting "eye movement" to implement the pause-and-resume feature. (Appx4712 at ¶ 31; Appx4751.)

Dr. Essa then demonstrated that Appellant's analysis of eye trackers was irrelevant to whether Goldstein was enabling. (Appx4730 at ¶ 63.) "Goldstein's automated pause/resume functionality would only need an eye contact sensor," while "an eye tracker would not be needed to implement Goldstein's automated pause/resume functionality." (*Id.*) "Because eye contact sensing is simpler than eye tracking, Dr. Balakrishnan and Dr. Pelz examined a problem that would be more difficult than implementing Goldstein's automated pause/resume functionality." (*Id.*)

Dr. Essa also responded to mistakes Appellant's incorrect discussion of the IBM pupil/glint technology. (Appx4713-4722.) Appellant's experts had failed to examine the details of Goldstein's exemplary IBM sensor, which were described in a 1998 paper by Morimoto, which was cited by the 1999 MAGIC paper that Goldstein relied upon. (Appx4713-4714; *see also* Appx2718 & n.10; Appx3448-3455.) Morimoto disclosed that the pupil/glint detection discussed in Goldstein could be performed with an "inexpensive," "very compact" camera and with standard processing capability (on a "Pentium 200 machine"). (Appx4716, *quoting* Appx3454.) Dr. Essa also noted that Appellant's expert had ignored other IBM sensors that could have been readily incorporated into cellphones, including one that Dr. Essa had created with an IBM scientist that offered a low-cost way to detect and track eyes without calibration. (Appx4717-4722; Appx3441-3447; Appx3456-3463.)

Dr. Essa next corrected Appellant's description of the Goldstein lab's work on the Smart Bailando prototype. (Appx4724-4730.) The Master's thesis did not show "a failure to implement the automated pause/resume functionality of the prior art Goldstein publication," because Smart Bailando "require[d] more than the IBM eye sensing technology referenced in Goldstein." (Appx4728 at ¶¶ 57-60.) In fact, another publicly available paper that Appellant's experts had ignored showed that Goldstein's group ***did*** successfully implement the pause-and-resume feature on Smart Bailando. (Appx4724-4726 at ¶¶ 54-56, *citing* Appx3597-3601.)

Dr. Essa next demonstrated that then-existing cellphones had more advanced processing power, memory, and camera capabilities than Appellant's Dr. Pelz had claimed. (*Compare* Appx4732-4749 (Essa); *with* Appx5826-5831 (Pelz).) Dr. Pelz had asserted that cellphones had primarily rear-facing cameras unable to take video, and that PDAs were generally limited to under 206 MHz of processing power. (Appx5826-5831, Appx5854-5867.) But Dr. Essa gave many examples of phones and

PDAs with built-in forward-facing digital cameras that could take video, with 300 MHZ or more in processing power, and with ample memory. (Appx4732-4749.) He specifically identified the Tiqit eigthythree—a popular handheld device that ran Windows, had enough memory to run all software typically used on a laptop, had cellular capability—as a mobile device that could have been readily modified to include the IBM eye sensing technology. (Appx4741, Appx4747-4749, Appx4755.)

Having considered these facts, Dr. Essa concluded that Goldstein enabled implementing the pause-and-resume feature that Samsung had relied upon for anticipation on a cellphone. (Appx4753-4758 at ¶¶ 99-108.) A skilled artisan could have either "mount[ed] an eye sensor on a mobile device" like those described in the IBM work or could have adapted a camera on many existing cellphones to work as an imaging device. (Appx4754 at ¶¶ 100-101.) Existing cellphones had the necessary processing power to detect eye contact. (Appx4755 at ¶¶ 102-103.) Goldstein included detail that was "similar to other contemporaneous patent filings," including Appellant's patents, and it identified IBM technology for implementing the pause-and-resume feature on a cellphone. (Appx4756 at ¶104.) And "the state of the art was robust," with detailed disclosures on eye sensing from IBM that included "well-developed and detailed instructions" on how to implement it. (Appx4757 at ¶ 106.)

Finally, Dr. Essa confirmed that a skilled artisan would interpret Goldstein to disclose that its sensors were located "in or on the mobile device," contrary to Appellant's arguments. (Appx4706-4708 at ¶¶ 24-26.)

D. The Board Properly Declines to Permit Appellant to Introduce Untimely Evidence That It Could Have Offered Sooner.

After receiving Samsung's reply, Appellant sought to exclude Dr. Essa's testimony as untimely or, in the alternative, to file a sur-reply and submit additional evidence. (Appx684-694.) Appellant complained that Samsung had supposedly raised a new argument that Goldstein disclosed an "eye contact sensor," (Appx689), even though Samsung's petition had plainly stated that Goldstein disclosed "sensing … eye contact." (Appx201; Appx1084.) Samsung opposed the motion, because Dr. Essa had merely responded to Appellant's experts, and Appellant already had ample opportunity to present its full case that Goldstein lacked enablement with its prior Patent Owner Response. (Appx724-736.)

The Board allowed Appellant to file a sur-reply but did not strike Dr. Essa's testimony or permit Appellant to submit more evidence. (Appx738-739.) The Board would later reaffirm that Samsung's arguments and evidence "fall within the proper scope of a reply." (Appx121; Appx58.) Appellant argued in its sur-reply that Goldstein did not disclose an "eye contact" sensor and reiterated its argument that Goldstein did not enable use of an "eye tracker" on a cellphone. (Appx806-818.)

E. The Board's Final Written Decisions Determine that Goldstein Anticipates the Challenged Claims.

The Board correctly concluded that all challenged claims were invalid. (Appx1-124.) As relevant here, the Board found that Goldstein anticipated claim 14 of the '660 patent and claim 11 of the '665 patent, because it discloses a hardware sensor "in or on the device," as claimed, and enables a cellphone with the automated pause-and-resume feature. (Appx75-100; Appx14-37.) The Board thus declined to reach the other potential invalidity ground (obviousness based on the Ho and Roschelle references) for those claims. (Appx101; Appx38.)

1. The Board Finds that Goldstein Discloses a Hardware Sensor "In or On" a Cellphone.

The Board first determined that Goldstein met the claim limitation requiring "a hardware sensor in or on the device that senses attention of the user specifically toward the device." (Appx75-81; Appx14-21.) The Board found that Goldstein's Figure 1 "clearly indicates" that its display window and the boundary of that window are "located in or on mobile device 10" and "shows sensors 20 and 22 touching the outside of boundary 16." (Appx79-80; Appx17-18.) A skilled artisan would thus interpret Goldstein's disclosure that the sensor was "proximate" to the boundary to mean that both are "in or on" the mobile device. (*Id.*) Goldstein's original claim 11 "confirm[ed] that interpretation," because it recited "a sensor" that was "in a device." (Appx80; Appx18.) The Board also noted Goldstein's disclosure that the sensor was mounted in a "known positional relationship" to the display screen and observed that this relationship could not exist if the sensor were separate from the device unless some other mounting structure were involved. (Appx80-81; Appx18.) Goldstein did not mention or show any separate mounting structure, which underscored that the sensor was "in or on" the device itself, just as Goldstein's Figure 1 shows. (*Id.*)

2. The Board Finds that Goldstein Enables Incorporating Its Pause-and-Resume Feature on a Cellphone.

The Board also found that Goldstein enabled the pause-and-resume feature that Samsung relied on for anticipation. (Appx84-100; Appx22-37; *citing* Appx4753-4758 at ¶¶ 99-108.) The Board first articulated the relevant burdens, noting Samsung had met its initial burden by "arguing persuasively" in its petition "that Goldstein's disclosure was anticipating." (Appx84; Appx22.) Appellant thus had a "burden of production" to contest enablement in its Patent Owner Response, (Appx85; Appx22), and Samsung "successfully rebut[ted] Patent Owner's evidence" in reply. (Appx90-91; Appx28.) Despite the shifting burdens of production, the Board kept the burden of persuasion on Samsung throughout. (Appx85 n.4; Appx22-23 n.4.)

Turning to the merits, the Board determined that Goldstein is enabling. (Appx85-100; Appx22-37.) The Board credited Dr. Essa's testimony that "processing capabilities of mobile devices (*e.g.* cellular phones or PDAs) were sufficient to enable a [skilled artisan] to implement the IBM eye sensing technology," including that in the 1998 Morimoto paper that described the IBM sensor and in Dr. Essa's own work from the time. (Appx94-95 & n.8, Appx31-32 & n.8, *citing* Appx4755 at ¶ 102.) The Board's found that Appellant's expert Dr. Pelz had understated the power of then-existing devices, when, in fact, Dr. Essa had shown that handheld devices like the "Tiqit eightythree" had cellular capability, ran desktop operating software, and had a faster processor than Dr. Pelz had suggested. (Appx94 & Appx31-32, *citing*

Appx4717-4718.) Likewise, the Board gave "little weight" to the enablement analysis by Appellant's expert Dr. Balakrishnan because it ignored "other relevant eye sensing technology of which a [skilled artisan] would have known." (Appx94; Appx32.) In particular, Dr. Balakrishnan "did not consider the eye tracking system described in the Morimoto paper," even though it was the same system that had been described in the 1999 IBM MAGIC paper but without some of the more complex functionality that was irrelevant to Goldstein's disclosure. (Appx95; Appx32; Appx2718.) He also failed to consider other IBM eye sensing technology, including the published work of the author of the 1999 MAGIC paper (Flickner) who collaborated with Dr. Essa. (*Id.*)

Finally, the Board rejected Appellant's argument that Goldstein's colleagues had tried and failed to implement the pause-and-resume feature on a mobile device in their Smart Bailando prototype. (Appx95-100; Appx33-37.) The Board found that, in fact, the Smart Bailando project successfully created a "working model" that implemented the pause-and-resume feature on a mobile device, even if it may not have implemented other more complicated (and irrelevant) functionality. (Appx96; Appx34.) The Board rejected Appellant's arguments because they related to limitations or functionality that were not required by the claims (and thus don't have to be enabled) while ignoring other technology that could be used to implement the pause-and-resume feature. (Appx97-99; Appx34-36.) Although Smart Bailando involved a camera mounted on a PDA (rather than a cellphone), the Board found a skilled artisan could add cellular capability to a PDA. (Appx99-100; Appx36-37.)

SUMMARY OF THE ARGUMENT

This Court should reject Appellant's procedural complaints. Samsung's petitions said that Goldstein disclosed "sensing … eye contact," yet Appellant chose not to address that in its Patent Owner Response. Appellant instead focused on an irrelevant issue ("eye trackers") and presented an incomplete picture of existing cellphones and of Goldstein's prototype. Samsung's reply thus reiterated that Goldstein disclosed sensing eye contact, discussed the full capabilities of then-existing mobile devices and Goldstein's prototype, and showed that Goldstein enabled use of an eye contact sensor. After seeing this evidence, Appellant regretted its decision not to have its experts address all the relevant facts and sought a second chance to do so, but the Board properly refused. Appellant's experts could have addressed those issues months earlier, so there was no reason to risk missing the statute's 1-year IPR completion deadline to accommodate untimely evidence.

The Board's merits decision was thorough and well-supported. Substantial evidence showed that Goldstein discloses a sensor "in or on the device," including Goldstein's figures and its original claim that requires a sensor "in" the device. Goldstein is enabling because it discloses implementing the pause-and-resume feature by sensing eye contact (*i.e.*, whether the user is looking at the device), and a skilled artisan could implement that on a cellphone. Indeed, Goldstein discloses sensing eye contact with the same IBM pupil/glint technology that Appellant's patents rely upon, so Appellant is in no position to say that Goldstein does not enable it.

ARGUMENT

I. The Board Did Not Abuse Its Discretion by Preventing Appellant from Filing an Untimely Declaration.

The Board correctly prevented Appellant from submitting late evidence that Appellant could (and should) have submitted earlier. The Board has "broad discretion to regulate the presentation of evidence" to ensure the efficient and fair resolution of proceedings before it, and this Court reviews the Board's procedural rulings for abuse of discretion. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1081-82 (Fed. Cir. 2015); 5 U.S.C. § 706(2)(A). The Board must exercise that discretion consistently with the Administrative Procedure Act, which requires the parties be "timely informed of . . . the matters of fact and law asserted," receive an "opportunity for ... the submission and consideration of facts [and] arguments," and be able to "submit rebuttal evidence … as may be required for a full and true disclosure of the facts." *Belden*, 805 F.3d at 1080 (quoting 5 U.S.C. §§ 553(b)(3), 554(c), 556(d)). But the Board is entitled to enforce its rules and to refuse to entertain late submissions. *See, e.g., Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-1370 (Fed. Cir. 2016) (affirming the exclusions of reply evidence that attempted to make new arguments that a petitioner could have included in its petition); *Bilstad v. Wakalopulos*, 386 F. 3d 1116, 1126-27 (Fed. Cir. 2004) (holding the Board did not abuse its discretion in denying a late motion in an interference). That is precisely what the Board did here, and Appellant does not show any abuse of discretion.

A. Appellant Had Ample Opportunity to Address the Relevant Issues, and the Board Properly Prevented Delay of the Proceedings.

The Board did not abuse its broad discretion by preventing Appellant from submitting a late declaration on issues that it could have addressed previously with its Patent Owner Response. Samsung's petition established that Goldstein anticipated by disclosing a device with a sensor that controls whether the device should start displaying text, pause that display, or resume the presentation, based on whether the "focus" of the user's "pupils" is on the screen, *i.e.*, "sensing eye contact." (Appx194, Appx201; Appx1077, Appx1084; Appx2298-2300, Appx2304.) Appellant had ample opportunity in its Patent Owner Response to address anything it wanted about these contentions (or anything else in Goldstein). Yet Appellant narrowly tailored its response, ignoring Samsung's evidence that Goldstein disclosed "sensing … eye contact." Appellant's experts instead focused on an issue ("eye trackers") that was a red herring, discussed technology (*e.g.*, cellphones limited to 206 MHz processors) that did not reflect the full scope of what a skilled artisan could do, and inaccurately characterized the Goldstein group's work on the Smart Bailando prototype. (*See, e.g.*, Appx467-470; Appx5619-5622; Appx5818-5868.) Samsung then properly refuted this evidence, with an expert submission from Dr. Essa (and supporting documents) that the Board found "fall[s] within the proper scope of a reply." (Appx121; Appx58; *see also* pp. 15-18.) Appellant had ample opportunity to scrutinize Samsung's reply evidence—it cross-examined Dr. Essa for over 7 hours, submitted 15 pages of "observations" on that examination, and submitted an additional 10-page sur-reply that the Board specially permitted it to address enablement. (Appx9450; Appx9780; Appx806-817; Appx1690-1702; Appx777-791; Appx1657-1671.) The Board did not abuse its discretion by declining to also give Appellant a second chance to submit evidence on issues that it could have addressed sooner.

Several considerations support the Board's decision. First, the Board excluded only evidence that Appellant could have submitted earlier. *See, e.g., Redline Detection LLC v. Star Envirotech, Inc.,* 811 F.3d 435, 443-445 (Fed. Cir. 2015) (upholding the Board's discretionary refusal to consider supplemental expert evidence that a party could have submitted earlier). Appellant argues (at 37-38) that it wanted to submit additional testimony on three topics—(1) whether a skilled artisan would have understood Goldstein to disclose sensing eye contact; (2) whether a skilled artisan could implement Goldstein's pause-and-resume feature on a Tiqit eightythree handheld device; and (3) whether Goldstein's group successfully implemented the pause-and-resume feature on the Smart Bailando prototype. But Appellant could, and should, have fully addressed those topics with its Patent Owner Response if it wanted to submit evidence on them.

With respect to the first topic, Samsung's petition plainly stated that Goldstein disclosed "sensing … eye contact" by determining whether the "focus" of the user's pupils was on the device's screen, (Appx193-195, Appx201, Appx1075-1077, Appx1084), yet Appellant never disputed that in its preliminary response or Patent

Owner Response. Appellant offers no explanation for why it did not address this issue in its Patent Owner Response, instead falsely denying (at 35 n.5) that Samsung's petition made this argument at all. The Board's regulations warn that "[a]ny material fact not specifically denied may be considered admitted," 37 C.F.R. § 42.23(a), so Appellant was on notice that it needed to submit all its evidence with the Patent Owner Response. Yet Appellant avoided the issue, probably because its own patent admits the same IBM pupil/glint technology in Goldstein uses an "eye contact sensor." (Appx160 at 1:63-65; *see also* Appx163 at 7:5-34.)

With respect to the other topics, Appellant has no basis to complain, because it ignored key evidence about the capabilities of then-existing mobile devices and Smart Bailando when it injected those issues into the proceeding. Indeed, Appellant's expert, Dr. Pelz, admitted that he did not investigate the full set of mobile devices that were available at the time. (Appx4383-4386, Appx4389-4391.) Samsung's reply expert submission thus gave the Board the rest of the story, which Appellant could have addressed earlier had it done a more thorough review and analysis of the publicly existing literature. Dr. Essa explained that many then-existing mobile devices (like the Tiqit eightythree) were more advanced than Appellant's experts had let on, as an easy search of public material revealed. (Appx4740-4749, Appx4755; Appx4682-4691.) And Dr. Essa showed that the Smart Bailando project successfully implementing the pause-and-resume feature in part by citing a publicly accessible paper on the project. (Appx4724-4726 at ¶¶ 54-56, *citing* Appx3597-3601.) Appellant and its experts had equal access to this paper could have addressed it in the Patent Owner Response but instead chose a different publication so they could discuss the irrelevant issue of whether the Goldstein group could implement other, more complicated features on a mobile device. (Appx5844-5845; *citing* Appx5948-6012.) Having made a strategic decision to omit relevant evidence, Appellant was not entitled to another chance to address them after Samsung gave (at its earliest opportunity) the Board the rest of the relevant evidence in reply.

Second, the Board properly curtailed the parties' submissions given the limited timeframe to complete an *inter partes* review. The statute allows the Board only a year from institution to render a final written decision. *See* 35 U.S.C. § 316(a)(11). Appellant sought to file its supplemental expert evidence on March 15, 2016, over 7.5 months into the proceeding and almost 5 months after filing its Patent Owner Response and first set of declarations. (Appx127-128; Appx130-131.) Had the Board permitted that submission, it would have caused significant delay. The Board would have then needed to allow Samsung to cross-examine Appellant's experts on their new submission, *see* 37 C.F.R. § 42.51(b)(1)(ii), and submit observations identifying any key testimony. The Board may also have been presented with a further request from Samsung to have Dr. Essa submit a sur-sur-reply declaration addressing any new points raised by Appellant's experts, which might, in turn, require a further deposition of Dr. Essa. All of this would have needed to occur within 6 weeks, before the June 23, 2016 oral hearing. The Board had ample discretion to prevent Appellant from triggering this flurry of additional submissions, which would have made it difficult for the Board to meet its statutory decision deadline. *Cf. Ariosa Diagnostics v. Verinata Health, Inc.,* 805 F.3d 1359, 1367 (Fed. Cir. 2016) (noting that the "Board may control its own proceedings" and that its rules "are designed generally to require that the parties make their cases in a very small number of filings" to ensure it meets the one-year deadline). And although the statute allows extending the final written decision deadline for 6 months upon a showing of "good cause," *see* 35 U.S.C. § 316(a)(11), Appellant has failed to establish any such "good cause," because it could have avoided the delay by having its experts address all the relevant issues with its Patent Owner Response.

Third, the Board correctly gave Samsung the last evidentiary word on an issue (unpatentability) where the Board held that Samsung bears the burden of persuasion. (Appx83 n.4; Appx22-23 n.4.) The party with the burden traditionally has the final say. Each party in a district court trial presents the last rebuttal case on issues for which it bears the burden of persuasion. An appellant at the Federal Circuit gets the final brief and final chance at oral argument. The Board had ample discretion to enforce that same order here, giving Samsung's expert the last word on whether Goldstein anticipates (including whether it is enabling), because the Board found (at Appellant's urging) that Samsung bore the burden of persuasion on proving Goldstein was enabling as part of Samsung's burden on anticipation. (*Id.*) Indeed, the Board's regulations say that the "Federal Rules of Evidence shall apply," 37 C.F.R. § 42.62(a), putting Appellant on notice that the evidentiary presentation would mimic a district court. If anything, the Board went out of its way to give Appellant a chance to respond, giving it a sur-reply, (Appx739; Appx1623), and giving Appellant the last word at oral argument, (Appx1928-1929), which a party in Appellant's position would ordinarily not receive. Nothing in the Administrative Procedure Act required the Board to do more, much less to deviate from the traditional order of proof that is widely used across different tribunals.

The proceedings here thus unfolded exactly as they should have. Samsung's petition put forth a *prima facie* case of anticipation. The petition pointed to Goldstein's disclosure of a sensor that determines whether the user's pupils are focused on the device's screen and alleged this was "sensing … eye contact," (Appx201; Appx1084; Appx2304; *see also* Appx193-195, Appx1075-1077), so it did not need to say any more at that point on whether Goldstein was enabling. *See, e.g., In re Antor Media Corp.*, 689 F.3d 1282, 1288-89 (Fed. Cir. 2012). Appellant was then free to challenge whether Goldstein was enabling, which it did by focusing its experts on an overly narrow set of evidence. Samsung then had a reply, where it had its first opportunity to respond and enablement and did so with expert evidence that corrected the incomplete picture drawn by Appellant's experts. The Board charitably gave Appellant a further opportunity to respond to Samsung's enablement evidence through a sur-reply and extra time at oral argument, but it rightly declined to permit Appellant an opportunity to submit additional evidence on non-enablement that it could (and should) have submitted with the Patent Owner Response. Agencies have to be able to cut off the parties' evidentiary submissions at some point—otherwise, they would never stop. Here, the Board gave each party a chance to submit evidence on enablement and even let Appellant comment on Samsung's reply evidence. That satisfied all the applicable legal requirements.

B. Samsung's Arguments Were Consistent Throughout the IPR, Rendering Appellant's Cited Case Law Inapplicable.

The Court should reject Appellant's invitation to second-guess the Board's procedural rulings, because the Board did not abuse its discretion is declining to allow Appellant's untimely attempt to re-do its expert declarations. Appellant's argument is entirely based (at 29-30) on an erroneous premise—*i.e.*, that Samsung supposedly "change[d] its anticipation theory" and thus convinced the Board to rely "on new grounds of unpatentability"—when, in fact, Samsung's anticipation theory was consistent throughout the case. Samsung's petitions plainly indicated that it was relying on "sensor 20," which could determine the "focus, with respect to the screen, of the pupils of the user's eyes." (Appx193-194; Appx1077.) Samsung's petitions further cited the parts of Goldstein that talk about the IBM approach to detecting where the user is looking, (Appx193-195 & Appx1075-1077, *citing* Appx2352 at ¶¶ 27-29), which is the same pupil/glint technique that Appellant's own patents characterize as using an "eye contact sensor." (Appx160 at 1:63-66, Appx163 at 7:5-21.) And, to ensure it was not leaving any doubt, Samsung's petition (and initial expert declaration) alleged that Goldstein disclosed "sensing … eye contact" through its disclosure of sensing whether the user's eyes were focused on the text window or somewhere else. (Appx201; Appx2304 at ¶ 38.) After Appellant's expert responded by insisting that Goldstein disclosed a "specialized eye tracker," (Appx5603-5604), Samsung's reply expert rebutted this testimony by elaborating on the same theory from the petition—Goldstein discloses a sensor that uses "eye contact." (*See, e.g.,* Appx4711-4712 at ¶¶ 30-31.) That was not a new theory; it was additional support for the same theory in the petition. (Appx193-195, Appx201; Appx1075-1077, Appx1084.)

Appellant attempts (at 34-35) to create a shift in position by erroneously fixating on the fact that Samsung's petition quoted the part of Goldstein that refers to "eye tracking sensors" and suggesting that this is inconsistent with Samsung saying in reply that they are "eye contact sensors." But Samsung's petitions said that these "eye tracking sensors" work by "sensing … eye contact" because they assess whether the user is looking at the screen or away from it based on the "focus" of his "pupils." (Appx193-195; Appx201; Appx1075-1077; Appx1084.) Samsung's reply expert reiterated that Goldstein works by using "eye contact" as Appellant's patents use that term and refuted Appellant's erroneous focus on the "eye tracking" label in Goldstein:

> Goldstein confirms that the sensors needed to implement its automated pause/resume functionality would be eye contact sensors as described by the '665 and '660 Patents. Specifically, although Goldstein refers to "eye tracking sensors," a POSITA would not have understood Goldstein as requiring these sensors to be the "eye trackers" distinguished from "eye contact sensors" in the '665 and '660 Patents. For example, Goldstein consistently refers to the sensing being "with respect to the display screen" or "display

> window." Ex. 1005 (Goldstein), Abstract, ¶¶ 0001, 0008, 0010, 0011, 0021, 0029. Goldstein also clearly refers to an eye contact sensor in describing the sensor 20 as performing "a two state detection task" in which the sensor 20 "only needs to detect one of two states of the user's eyes" - a first state where gaze is "located within window 12" and a second state where gaze is "located outside the window 12." *Id.* at ¶ 0022. Goldstein reinforces this point by stating, "[o]nce again, it is to be emphasized that the sensor only needs to determine whether a reader's point of gaze is or is not focused on a location within the text window 12." *Id.* at ¶ 0030.

(Appx4711 at ¶ 30.) Samsung was not shifting to an obviousness theory here or attempting to pull in references other than Goldstein. Samsung's expert was explaining why Goldstein itself discloses "sensing … eye contact," which is precisely the position Samsung took in its petitions.

It was entirely appropriate for Samsung to elaborate on these points in reply. They were consistent with, and amplified, the points in the petitions. Samsung had not said more in the petitions because (1) it needed only to present a *prima facie* case of anticipation by showing that Goldstein met all the claim limitations, *Antor Media*, 689 F.3d at 1288-89, and (2) it did not reasonably expect that Appellant would contest enablement given that Goldstein disclosed the same IBM eye sensing technology that Appellant's patents rely upon and identify as using an "eye contact sensor." (Appx4712 at ¶ 31, Appx4751-4752 at ¶ 95; Appx160 at 1:63-65, Appx163 at 7:5-34.) Consistent with that belief, Samsung's petitions relied on an expert, Dr. Turnbull, who was a general expert in the field of attentive user interfaces. Samsung's expectations were initially correct—Appellant's preliminary response didn't mention enablement at all and instead focused on other limitations. (Appx285-298; Appx1169-1182.) But, when Appellant surprisingly shifted to contest enablement in its Patent Owner Response, Samsung properly refuted it with a specialist (Dr. Essa) who had personal experience with the IBM eye sensing technology and one of the inventors (Dr. Flickner) who had created it. Appellant is thus wrong to suggest (at 19, 34) that Samsung's use of a new expert in reply reflects a shift in theories or some failing by Dr. Turnbull. Dr. Essa was relying on (and elaborating upon to address the newly-raised enablement issue) the same theory that was already in the petition.

With Appellant's erroneous suggestion that Samsung shifted positions debunked, Appellant's arguments about the Administrative Procedure Act and due process collapse. Samsung's petition "timely informed" Appellant of "the matters of fact and law asserted," as required by 5 U.S.C. § 553(b)(3), by making clear that Goldstein disclosed a sensor that detected "eye contact." (Appx193-195; Appx201; Appx1075-77, Appx1084; Appx2304 at ¶ 38.) Appellant had an "opportunity for ... the submission and consideration of facts [and] arguments" and to "submit rebuttal evidence," as required by 5 U.S.C. §§ 554(c) and 556(d), because it could have addressed all three issues that it now complains about on appeal in its Patent Owner Response and accompanying declarations. Neither the APA nor due process require anything more. They require only an "opportunity" to be heard according to the Board's rules and deadlines, not giving a party a second, untimely bite at the apple when it squandered its chance to timely address the issue.

Appellant's cited case law (at 30-34) is inapposite given that Samsung's petition specifically referenced Goldstein's disclosure of "sensing … eye contact." For example, *Dell Inc v. Acceleron, LLC*, 818 F.3d 1293 (Fed. Cir. 2016), dealt with a situation where the petitioner had repeatedly shifted the part of the reference that it was relying on to show a particular limitation was met. The petitioner first focused on the reference's "articulating door 262" in its petition, then switched to its "power-supply mounting mechanisms 278" in its reply, and then switched again to the reference's "slides" at oral argument before the Board. *Id.* at 1301. The patent owner there had no opportunity to address the new allegations, especially the one coming at oral argument. Here, by contrast, Samsung relied on Goldstein's "eye tracking sensor 20" throughout the proceedings, has always said that use of that sensor to implement the pause-and-resume feature involves "sensing … eye contact," and has merely elaborated on those same contentions as the proceedings continued. Appellant thus could have addressed whether Goldstein discloses "sensing … eye contact" in its Patent Owner Response and cannot claim surprise, unlike the patent owner in *Dell*.

Appellant's reliance on *In re NuVasive, Inc.*, 841 F.3d 966 (Fed. Cir. 2016), is similarly misplaced. The holding there actually supports what the Board did here. *NuVasive* affirmed the Board's decision not to allow the patent owner to submit additional evidence responding to the petitioner's reply arguments about Figure 18 of a prior art reference (Michelson), where the petitioner had previously mentioned that figure in its petition and had asserted that it showed the disputed limitation. *Id.* at

972. The Court held that this discussion in the petition was sufficient to "put NuVasive on notice that it was obliged to use its Patent Owner Response to address" the argument. *Id.* The same is true here: Samsung's petitions referenced the "eye tracking sensor 20" and argued that Goldstein's use of it involved "sensing … eye contact," (Appx193-194, Appx201), so Appellant was obligated to use its Patent Owner Response to address the issue. The others parts of *NuVasive*, which involved a second *inter partes* review where the petition did not cite the relevant figure, are all irrelevant, because Samsung's petition here did cite sensor 20 and mention "eye contact."

Appellant's cited cases also do not support its challenge (at 37-38) to the Board's exclusion of additional evidence on the Tiqit eightythree device and Goldstein's work on the Smart Bailando prototype. Appellant's expert declarations put forth an incorrect and incomplete view of the state of cellular phone technology in 2003 and of Goldstein's attempts to implement the pause-and-resume feature on a handheld device. (Appx5826-5831; Appx5854-5867; Appx5844-5846; Appx5619-5622.) For example, Appellant's expert Dr. Pelz provided a chart of available cellphones that omitted the Tiqit eightythree (among many others) and made it seem like all mobile devices from the time had lesser processing power, memory, and camera capability than they really did. (Appx5826-5831; Appx5854-5867.) He also discussed only aspects of the Smart Bailando prototype that made it seem like a failure while ignoring a publication that showed it succeeded in implementing the pause-and-resume feature. (Appx5844-5846.) Samsung's reply expert (Dr. Essa) thus properly pointed to additional evidence on these topics that Appellant's experts had ignored. (*See* pp. 15-18.) The Board properly precluded Appellant from a further evidentiary response, because, having raised these issues, Appellant had an obligation to address ***all*** the evidence relevant to them, not just the evidence Appellant preferred. Instead, Appellant omitted the evidence, hoping Samsung wouldn't mention it. Having lost that strategic gamble, Appellant was not entitled to a second chance to address evidence that its experts could (and should) have addressed earlier.

The bottom line is that Samsung's petition notified Appellant that Goldstein's "eye tracking sensor 20" was used for "sensing … eye contact" using IBM technology, which is exactly what Appellant's patents describe using. Appellant was thus required to raise in its Patent Owner Response any and all arguments it had on whether Goldstein disclosed "sensing … eye contact" and whether it was enabling. Appellant chose not to do so, instead narrowly tailoring its presentation to avoid thorny issues that would demonstrate the conflict between its position on Goldstein and the enablement of its own patent and to avoid unfavorable evidence. The Board did not abuse its discretion by preventing Appellant from submitting new evidence months after the deadline for its Patent Owner Response.

II. The Board Correctly Determined that Goldstein Anticipates the Claims.

The Board correctly concluded that Goldstein's pause-and-resume feature discloses all the limitations of the Appellant' claims, and that Goldstein enabled a skilled artisan to implement that feature on a cellphone. Anticipation is a question of fact that is reviewed for substantial evidence. *See, e.g., Synopsys, Inc. v. Mentor Graphics Corp.*, 814 F.3d 1309, 1317 (Fed. Cir. 2016). "What a prior art reference teaches is also a question of fact." *In re Graves*, 69 F.3d 1147, 1151 (Fed. Cir. 1995). "Whether a prior art reference is enabling is a question of law based upon underlying factual findings." *Minn. Mining & Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1301 (Fed. Cir. 2002). Those underlying factual issues include the amount of direction the prior art reference provides, the state of the prior art, and the quantity of experimentation needed. *Elan Pharm., Inc. v. Mayo Found.*, 346 F.3d 1051, 1055 (Fed. Cir. 2003). "A prior art reference need not enable its full disclosure; it only needs to enable the portions of its disclosure alleged to anticipate the claimed invention." *In re Antor Media Corp.,* 689 F.3d 1282, 1290 (Fed. Cir. 2012). Here, the Board's anticipation finding is well-supported based on its factual findings.

A. Substantial Evidence Supports the Board's Finding that Goldstein Discloses a Hardware Sensor "in or on" the Mobile Device.

The Board correctly determined that Goldstein discloses every limitation of Appellant's claims. Appellant confines its challenge on appeal to a single limitation—whether Goldstein discloses "a hardware sensor in or on the device that senses attention of the user specifically toward the device." Substantial evidence supports the Board's finding that Goldstein discloses this limitation. The Board's decision resolved a conflict among experts about the interpretation of a prior art reference, which is not the sort of issue that this Court second-guesses. This Court should thus reject Appellant's attempts (at 42-45) to reargue the facts and to incorrectly characterize what the Board did.

Goldstein uniformly discloses that the sensor is "in or on" the mobile device. As the Board found, Goldstein's Figure 1 "clearly indicates" the sensor is "in or on" the device—it is shown next to the boundary of the device's screen, suggesting it is part of the device, unlike the user's eye, which is (obviously) separate from the device and thus shown apart from it in space in Figure 1:

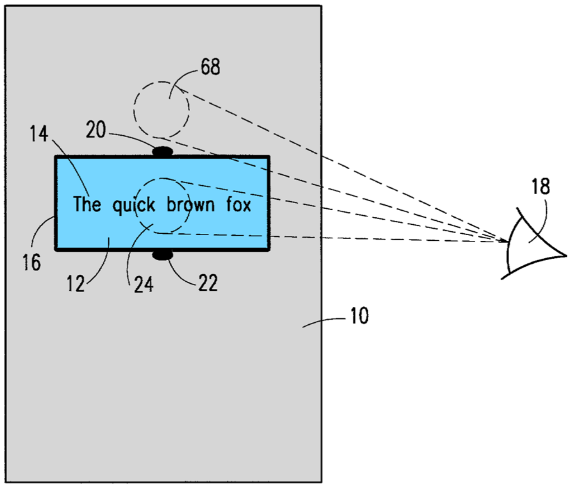


FIG. 1

(Appx2346; Appx2297-2298; Appx4706-4707; Appx79-80; Appx17-18.) Goldstein's written disclosure is consistent with Figure 1: it says that the sensor is "located proximate," *i.e.*, very near, the display screen's boundary, and that the sensor is "in a known positional relationship" with the screen. (Appx2351 at ¶ 21; Appx2297-2298; Appx4706-4707; Appx79-80; Appx17-18.) Samsung's expert explained that this showed the sensor was "in or on" the device—the sensor couldn't be in a "known positional relationship" with the screen unless it was part of the device, because, if they were separate, the relationship would change once the device moved. (Appx4706-4707; Appx18; Appx80-81.) Goldstein didn't show any separate mounting structure that would allow the sensor and device to be separate yet maintain a "known" relationship, so a skilled artisan would interpret it to disclose the sensor was "in or on" the device, just like Figure 1 shows. (*Id.*) And the clincher is that Goldstein's original claim 11 expressly requires a "sensor" that is "in the device." (Appx2354; Appx4707; Appx80; Appx18.)

None of Appellant's arguments justify upsetting the Board's factual finding. For starters, the Board was correct to rely upon Goldstein's Figure 1 and accompanying description. Long-established law permits relying on a reference's figures and drawings. *See, e.g., In re Mraz*, 455 F.2d 1069, 1072 (C.C.P.A. 1972) (Rich, J.) (relying on a figure to show the prior art disclosed the disputed limitation and explaining that statements in other precedent "did not mean that things patent drawings show clearly are to be disregarded"); *In re Bager*, 47 F.2d 951, 953 (C.C.P.A. 1931) ("Description for the purposes of anticipation can be by drawings alone as well as by words."). And, here, the Board was on even firmer ground than in those prior cases because it relied not only on a figure, but on the figure as understood in conjunction with the reference's textual description. The Board credited Samsung's expert testimony that, together, they disclosed the sensor was "in or on" the device. (Appx79-81; Appx17-18.) It was right to do so: Figure 1's depiction of the sensor as "in or on" the device is plain, especially when read in light of Goldstein's claim 11 (which Appellant's brief never mentions).

The Board did not improperly use Figure 1 to suggest "size or scale" of the sensor, as Appellant asserts (at 42-43), but for its depiction of the positional relationship between the sensor and the device. Appellant's citation to *Hockerson-Halberstadt, Inc. v. Avia Group Int'l.*, 222 F.3d 951, 954 (Fed. Cir. 2000), a claim construction case that cautioned against using a drawing to infer "precise proportions" where "the specification is completely silent on the issue" is therefore inapplicable. Here, the Board was not attempting to infer a "precise proportion" but whether the sensor was "in or on" the device, and the prior art reference's specification (including its original claim 11) spoke to the issue, explicitly saying that the sensor is "in" the device. Appellant's attempt (at 43) to parse Goldstein's use of the word "proximate" is particularly unpersuasive given original claim 11: Goldstein's statement that the sensor is located "proximately" to the screen is consistent with the sensor being "in or on" the device, as the Board found, and as claim 11 specifically requires.

Appellant's other arguments (at 43-45) fare no better. Appellant's alternative interpretation of Figure 1—*i.e.*, that it somehow showed the sensor was in front of, but not "in or on," the device—makes no sense. Figure 1 doesn't show any other structure for securing the sensor in "a known positional relationship" with the screen. (Appx4707-4708.) Under Appellant's interpretation, then, Figure 1 shows the sensor separate from the device, floating in mid-air, unattached to anything. The Board rightly rejected that: it found that the "only reasonable understanding" of Goldstein was that it shows the sensor "in or on" the device, which explains why Goldstein does not depict or discuss any separate mounting equipment. (Appx80-81; Appx18.) The Board's reasoning here did not "assume[] enablement," as Appellant suggests (at 43). This part of the Board's opinion has nothing to do with enablement at all; it addresses what Goldstein discloses, (Appx17-18; Appx79-81), leaving the question of whether that disclosure is enabled until later. (Appx22-37; Appx84-100.)

Finally, Appellant misses the point when discussing (at 43-45) Goldstein's failure to disclose a separate mounting structure for a sensor separate from the device. Goldstein uniformly disclosed a sensor "in or on" the device in Figure 1, the accompanying description, and original claim 11. Given those disclosures, there was no basis to think that anything in Goldstein suggested the sensor wasn't "in or on" the device. Goldstein's lack of disclosure of a separate mounting structure for the sensor only confirms that the sensor is not separate: such a mounting structure would be necessary for a separate sensor, yet Goldstein never mentions it or shows it in Figure 1. It did not matter that Appellant's expert could invent ways in which a separate sensor might be mounted. (*See* Blue Br. at 44.) Goldstein doesn't mention any of that, because Goldstein's sensor is "in or on" the device and thus doesn't require a separate mounting structure. (Appx4707-4708; Appx18; Appx80-81.)

B. Goldstein Enables Implementing the Pause-and-Resume Feature on a Cellphone Given the Board's Well-Supported Fact Findings.

1. Goldstein Discloses Sensing Eye Contact, Which Could Readily be Implemented on a Cellphone.

The Board correctly determined that Goldstein enables implementing its pause-and-resume feature on a mobile device. (Appx22-37; Appx84-100.) A skilled artisan would interpret Goldstein to disclose implementing that feature by detecting whether the user's pupils are focused on the screen (*i.e.*, "sensing eye contact"), and that skilled artisan could readily incorporate an eye contact sensor onto a cellphone, given the available processors, memory, and cameras at the time. Indeed, the Goldstein group's own work on the Smart Bailando prototype confirmed that skilled artisans could implement the pause-and-resume feature on a mobile device. And Goldstein discloses using the same IBM pupil/glint technology that Appellant's patents rely upon, in the same level of detail. Goldstein therefore enabled the feature alleged to anticipate, which is all that is necessary. *Antor Media*, 689 F.3d at 1290. Appellant's arguments about enabling "eye trackers" are all irrelevant, because that advanced functionality was unnecessary for Goldstein's pause-and-resume feature.

There should be little doubt that Goldstein discloses using an "eye contact sensor" as Appellant's patents use that term. (Appx2351-2352 at ¶¶ 21-22, 30, Appx2346 at Fig. 1; Appx2298-2300, Appx2304; Appx4708-4712.) Appellant's patents say that "eye contact sensors detect eye contact when a subject or user is looking at the sensor," while "eye trackers detect eye movement to determine the direction a subject or user is looking." (Appx163 at 7:1-4.) Samsung's expert (Dr. Essa) made a similar distinction—he explained that eye "contact detection" involves determining whether a user is "looking specifically at a point" or "outside the point," while eye "tracking" involves looking at the "trajectories" and "velocities" of eye movement. (Appx9541-9544; *see also* Appx9563-9564.) Using those definitions, Goldstein's pause-and-resume feature plainly involves "eye contact," because it turns on whether the user is looking at the screen or not. (Appx2351-2352 at ¶¶ 21-22, 30, Appx2346 at Fig. 1; Appx2298-2300, Appx2304; Appx4708-4713.) Goldstein says point blank that "it is only necessary to know whether the pupils of the user's eyes 18 are directed to a point of gaze 24, located within window 12 and thus focused upon text segments therein, or are directed to any location outside the window 12":

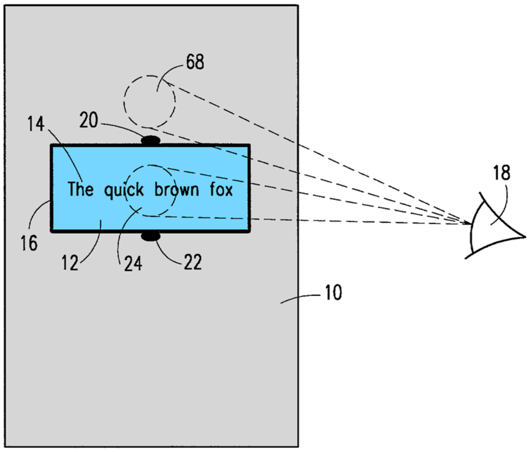


FIG. 1

(Appx2346; Appx2351 at ¶ 22; *see also* Appx2352 at ¶ 30.) Goldstein adds that "any suitable device" that "is capable of performing this two state detection may be used for sensor 20." (*Id.*) Goldstein thus discloses using its sensor to monitor eye contact as both Appellant's patents and the experts have used the term. (Appx4711-4713, Appx4730.) That should be no surprise, as Goldstein is describing the same hardware and techniques as the IBM patent (Amir) that Appellant's patent relies upon to disclose an "eye contact sensor." (Appx4712, Appx4700-4705, Appx4751; Appx160 at 1:63-67, Appx163 at 7:5-21; Appx2352 at ¶¶ 26-30; Appx3038 at Abstract, Appx3041 at Fig. 3, Appx3043-3047 at 2:62-64, 5:65-7:31, 9:34-35.)

Appellant is thus wrong to assert (at 46) that Goldstein "requires more than simply detecting eye contact with a sensor." Appellant initially invokes Goldstein's statement that its sensor performs a "geometric computation," but Samsung's expert explained (in response to questioning by Appellant) that this passage refers to determining eye contact. (Appx9557-9559.) In particular, Goldstein's "geometric computation" involves calculating the relationship between pupil location and glint, (*id.*), which Appellant's patents themselves describe as necessary for sensing eye contact, invoking the same IBM work that Goldstein relies upon. (Appx163 at 7:5-34.) Appellant then stresses (at 46, 49) Goldstein's use of the term "gaze," but this term is consistent with sensing eye contact. The IBM patent (Amir) that Appellant's patents invoke as an "eye contact sensor," (*id.*), refers to "determining eye contact using gaze." (Appx3043 at 2:62-64; Appx4712.) Although Appellant's patents indicate that "gaze" might also be detected using an "eye tracker," (Appx164 at 9:55-56), they don't preclude detecting gaze with an eye contact sensor, and, of course, the

IBM patent that Appellant's patents rely upon explicitly link "gaze" with "eye contact." (Appx3043 at 2:62-64; Appx4712.)

Appellant's remaining arguments (*e.g.*, at 45-46) all fixate on Goldstein's use of the term "eye tracking sensor 20," but this misses the point. As an initial matter, it may help to clarify the similarities and differences between eye contact sensors and eye tracking sensors. Both types of sensors use the "same camera" and other hardware (like infrared lighting). (Appx9515-9516, Appx9563, Appx9580-9581.) The difference between them involves the type and amount of "computation" involved with the data that the hardware collects. (*Id.*) Detecting "eye contact" requires determining only where a user is looking at a given instant, while "eye tracking" requires continuously monitoring the trajectory of a user's eyes to determine how they get from point A to point B. (Appx9563, Appx9541-9544.) Although Goldstein uses the term "eye tracking sensor," it describes implementing its pause-and-resume feature by relying on that sensor to assess eye contact—*i.e.*, whether the user is looking at the screen or not. (Appx2351-2352 at ¶¶ 21-22, 30, Fig. 1; Appx4708-4713.) So a skilled artisan would understand Goldstein to disclose that the sensor (which would involve the same hardware for sensing either "eye contact" or "eye tracking") need only detect eye contact to implement the pause-and-resume feature.

As a result, Goldstein must simply enable incorporating onto a cellphone a sensor that detects eye contact, not the additional components needed to accomplish eye tracking. *See, e.g., Antor Media*, 689 F.3d at 1290 ("A prior art reference need not enable its full disclosure; it only needs to enable the portions of its disclosure alleged to anticipate the claimed invention."). Goldstein might well contemplate more sophisticated "eye tracking" computations to implement some of its other, more ambitious features, such as adjusting the speed of the text scroll or rewinding text based on a user's eye movements. (Appx2348 at Fig. 5; Appx2351-2353 at ¶¶ 9, 36-37.) But this is all irrelevant to the pause-and-resume feature that the Board deemed anticipating, and none of it detracts from Goldstein's earlier disclosure of implementing the pause-and-resume feature by sensing eye contact alone.

There is little question that Goldstein enabled a skilled artisan to implement its pause-and-resume feature on a cellphone by sensing eye contact. Sophisticated eye sensing technology from IBM already existed, as reflected by Goldstein's citation to the 1999 IBM MAGIC paper and the MAGIC paper's citation to an earlier article by Morimoto. (Appx2351-2352 at ¶¶ 21, 30; Appx2715-2724; Appx3448-3455; Appx4713-4722, Appx4753-4758.) The Morimoto paper, in particular, described details about the required camera and infrared lighting sources, remarking that the system is "quite robust," "inexpensive and very compact," and can be implemented on "a single processor Pentium 200." (Appx93, *quoting* Appx3451-3454.) Likewise, Appellant's patents acknowledge that then-existing technology "allow[ed] the manufacture of low-cost high-resolution eye contact sensors," (Appx163 at 7:44-45), and they characterize the IBM algorithm used to process that data as "simple." (Appx166 at 13:40-43.) A skilled artisan could incorporate that same technology into a cellphone, given then-existing cellphone capabilities: Dr. Essa showed that several phones and PDAs had 400 MHz processors, while the Tiqit eightythree "was a handheld device with cellular capability that ran a desktop operating system with a Pentium 300 MHz processor." (Appx94, *citing* Appx4736-4748 at ¶¶ 72-88.) The Board correctly credited this testimony, along with Dr. Essa's conclusion that a skilled artisan could implement the IBM eye sensing technology on these types of devices. (Appx94, *citing* Appx4755 at ¶ 102.)

Two additional considerations confirm that Goldstein enabled a skilled artisan to practice the anticipating disclosure of Appellant's claims. First, Goldstein's description of sensing whether the user is looking at the device is strikingly similar to Appellant's patents own disclosure—both rely on the same IBM technique of comparing pupil location to glint. (*See* Appx4751-4752, Appx4713-4717; *compare* Appx2351-2352 at ¶¶ 21-30 *and* Appx2718 & n.10, Appx3448-3452, *with* Appx160-170 at 1:63-67, 7:5-34, 13:42-54, 22:12-14 *and* Appx3038-3050 at Abstract, 2:62-64, 5:65-7:33, Fig. 3.) That strongly supports the Board's finding that Goldstein is enabling. *See In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 1994) (rejecting the argument that a reference was not enabling because "appellant did not provide the type of detail in his specification that he now argues is necessary in prior art references"). Second, Goldstein's group successfully implemented the pause-and-resume feature on a PDA using a server-client model, which they dubbed the "Smart Bailando" prototype. (Appx95-100; Appx4724-4730 at ¶¶ 54-62; Appx3597-3601.) It was straight-forward at the time to incorporate cellular capability on a PDA, and the Tiqit eightythree device even had a port that could be used for that purpose. (Appx99-100; Appx4748-4749; Appx5959.) So the Smart Bailando work confirms that Goldstein's publication was enabling, because it shows skilled artisans with the same knowledge could actually carry out the claimed invention.

2. Appellant's Arguments Are Largely Irrelevant, Because They Focus on a Different Problem Than What is Claimed.

Appellant does not seem to dispute all the evidence above that a skilled artisan could implement the pause-and-resume feature on a cellphone by sensing eye contact. Nor could it: Appellant's own claims cover this feature, yet its specification includes the same level of detail about sensing eye contact as Goldstein. So Appellant instead argues (at 47, 50-51) about whether Goldstein enabled something else—incorporating "eye tracking sensors on a cellular telephone." But, as noted above, Goldstein discloses that its pause-and-resume feature can be implemented with a sensor that does not perform complicated "eye tracking" computations and instead detects only eye contact (*i.e.*, is the user looking at the device or not). Therefore, Appellant's evidence about "eye trackers" is all irrelevant: it applies to a purported problem that was irrelevant to the part of the reference alleged to anticipate. *See, e.g., Antor Media*, 689 F.3d at 1290; Appx94-95; Appx31-33.

Appellant's evidence also repeatedly understated the capabilities of cellular devices at the time. The Board rejected Appellant's assertion (at 47) that devices had issues with "operating system" and "processor speed," noting that the Tiqit eightythree ran a standard desktop operating system with a Pentium 300 MHz processor and that other devices included 400 MHz processors (Appx94-95, *citing* Appx4736-4748 at ¶¶ 72-88.) Moreover, Appellant's reference (at 47) to "positional calibration" issues with eye trackers is irrelevant, because Appellant's own patent admits that the prior IBM eye sensing technology used pupil location and glint "to detect eye contact without calibration." (Appx166 at 13:40-48; *see also* Appx4719-4722.) And Appellant's reference (at 47) to an alleged failure "as late as 2007" to "implement eye-trackers on mobile devices" is an irrelevant reference to Goldstein's attempt to implement more complicated functionality on the Smart Bailando prototype than is required to implement the anticipating feature. (Appx95-100.)

Appellant's remaining arguments (at 45-49) are all based on its incorrect description of the *inter partes* review proceedings. As demonstrated above, Samsung alleged throughout the IPR that Goldstein disclosed "sensing … eye contact," making that point in the petition, without any initial dispute from Appellant. (Appx201, Appx193-195; Appx1084, Appx1077-1079.) After Appellant's response challenged Goldstein's enablement of "eye tracking," Samsung's reply demonstrated that this was a red herring by elaborating on the fact that Goldstein discloses "sensing eye contact," and demonstrating that Goldstein enabled incorporating such technology onto a cellphone. The Board correctly found that Samsung's arguments "fall within the proper scope of a reply." (Appx121; Appx58.) So Samsung did not change positions on what Goldstein discloses. And, given that Appellant does not dispute that Goldstein enables implementing the pause-and-resume feature on a cellphone using an eye contact sensor, the Board correctly found it was enabling.

C. The Board Applied the Correct Legal Principles and Did Not Spill into Obviousness

The Court should also reject Appellant's suggestions (at 52-54) that the Board (or Samsung) is crossing the line from anticipation to obviousness. There are two distinct issues here: (1) whether Goldstein discloses all the relevant limitations, and (2) if so, whether that disclosure is enabling. Both the Board and Samsung followed the proper legal analysis for each issue.

On the first issue, both Samsung and the Board relied only on Goldstein's disclosure (as a skilled artisan would interpret it) to establish it disclosed all the relevant limitations. The Board's decision cites only Goldstein and expert testimony on what Goldstein disclosed to a skilled artisan to establish the limitations were met. (Appx75-83; Appx14-21.) Likewise, Samsung explained that Goldstein itself discloses use of an "eye contact sensor" through its statement that the sensor determines whether the user's "pupils" are focused on the screen. (Appx2351-2352 at ¶¶ 21-30; Appx193-195, Appx201; Appx2298-2300, Appx2304; Appx4706-4713.) There was no need to bring in any other references to make this point, and neither the Board nor Samsung did so. At most, Samsung pointed out that Goldstein discloses the same pupil and glint detection techniques that Appellant's patent characterizes as sensing "eye contact." (*See, e.g.,* Appx4712 at ¶ 31.) That doesn't involve an impermissible combination of additional references—it simply reinforces that ***Goldstein*** itself discloses sensing eye contact, because Goldstein describes using the very techniques that other skilled artisans (Appellant and IBM) characterized as sensing eye contact.

On the second issue (enablement), it was appropriate for the Board and Samsung to rely upon other references that showed the state of technology at the relevant time and the capabilities of other skilled artisans. Enablement of a prior art reference is based not only on what the reference itself says, but also "the state of the prior art" and "the relative skill of those in the art." *Elan*, 346 F.3d at 1055. The Board thus properly looked to other references (*e.g.,* the 1999 IBM MAGIC paper, the 1998 Morimoto paper, publications about various then-existing cellphones, evidence about the Smart Bailando prototype, as Dr. Essa's work at the time) to analyze those issues. (Appx94-100.)

Appellant itself seems to recognize (at 53) that relying on these references for enablement is permissible, because it wrongly asserts that the Board "did not rely" on them for this purpose. But the Board's decisions plainly show that the Board looked at them only for enablement. The decisions contain separate subsections on (1) Goldstein's disclosure of all the elements, (Appx75-84, Appx14-22) and (2) whether Goldstein is enabling. (Appx84-100; Appx22-37.) The Board cites the extrinsic evidence only in the latter section on enablement, not the earlier section on whether Goldstein discloses all the elements. Indeed, the question of whether eye contact sensing "could" be implemented on a cellular phone to operate the pause-and-resume feature is an enablement question. Samsung's expert explained that Goldstein itself discloses using an eye contact sensor. (*See, e.g.,* Appx4711-4713.) Looking to other evidence to determine whether a skilled artisan "could" successfully use one is entirely appropriate to show enablement.

CONCLUSION

For the reasons above, the Court should affirm the Board's final written decision holding that claim 11 of the '665 patent and claim 14 of the '660 patent are unpatentable.

Dated: May 1, 2017

Respectfully submitted,

/s/ Craig E. Countryman

Craig E. Countryman
Fish & Richardson P.C.
12390 El Camino Real
San Diego, CA 92130
(858) 678-5070
countryman@fr.com

Michael J. McKeon
Fish & Richardson P.C.
1425 K Street, NW
Washington, DC 20005
(202) 783-5070
mckeon@fr.com

Attorneys for Appellees
Samsung Electronics Co., Ltd.; Samsung Electronics America, Inc.

CERTIFICATE OF SERVICE AND FILING

I certify that I electronically filed the foregoing document using the Court's CM/ECF filing system on May 1, 2017. All counsel of record were served via CM/ECF on May 1, 2017.

/s/ Craig E. Countryman
Craig E. Countryman

CERTIFICATE OF COMPLIANCE

The undersigned attorney certifies that Appellees' Responsive Brief complies with the type-volume limitation set forth in Fed. R. App. P. 32(a)(7)(B). The relevant portions of the brief, including all footnotes, contain 13,256 words, as determined by Microsoft Word.

Dated: May 1, 2017

/s/ Craig E. Countryman
Craig E. Countryman
Fish & Richardson P.C.
12390 El Camino Real
San Diego, CA 92130
(858) 678-5070
countryman@fr.com